

6.0 AOC 8 - CANE CREEK TRAINING AREA

6.1 LOCATION OF STUDY AREA

Cane Creek Training Area comprises approximately two acres within the Cantonment Area at the Fort McClellan, Alabama Army Installation (Fig. 1). The study area boundary was devised by adding a 50-ft buffer outside of the Cane Creek Training Area site boundary.

6.2 AERIAL PHOTOGRAPH QUALITY ISSUES

A few photograph quality issues were encountered during photograph interpretation. They were corrected as follows:

- X **Quality** - In many areas of the photographs, the dynamic range of brightness values was insufficient to distinguish land cover classes. Due to extreme brightness (almost white), ground cover such as grass, bare soil, trails and roads could not be differentiated. At other locations, extremely dark (nearly black) areas made it difficult to delineate grass from forested areas. Where appropriate, the problem areas of the photographs were subset and image enhancement techniques were applied. Simple adjustments to the brightness and contrast were conducted, or in more severe cases, a histogram equalization in the range of the lookup table was performed on the specific area where interpretation was difficult. Photographic interpretation could not be conducted on the 1937 photographs due to the poor quality of the photographs.
- X **Rectification** - Although second- and third-order transformations were used in the rectification of the digital photographs, four rectified photographs contained too much error within Cane Creek Training Area to accurately digitize land use/cover polygons. Factors contributing to the error included: (1) insufficient ground control points (GCPs) due to pronounced changes in land cover between years, (2) photographic distortion (location of the site in relation to the center of the photograph and the angle of the camera/aircraft when the photograph was acquired), and (3) terrain distortion (a single photograph may cover a large geographic area of varying elevations even though the site of interest may have little topographic relief). To improve the photographic registration for Cane Creek Training Area, the area of the photograph containing the study area was subset from the four rectified digital photographs in question and the newly-created image files were re-rectified. The sub-setting and re-rectification provided sufficient quality to conduct the photograph interpretation.

6.3 FINDINGS

Complete photographic coverage of the study area was available for eight years of photographic coverage from 1937 to 1994 (Fig. 2). Photographic interpretation could not be conducted on the 1937 photographs due to poor image quality. A total of 67 anomalies were identified in the year-by-year land cover analysis. All anomalies were inspected to ascertain the cause of each anomaly. Anomalies for which the cause could not be determined, as well as anomalies potentially associated with waste disposal or chemical training activities, were determined to be of potential concern and should be assessed by the USAESCH. Of the 67 anomalies identified, 23 were caused by a pre-existing road and former trails. The remaining 44 anomalies were the result of temporary trails and

the clearing of trees and/or groundcover; these anomalies are considered to be of potential concern. A discussion of anomalies identified during the year-by-year comparison follows.

1937. The 1937 photographs were not interpreted because of poor photographic quality (see Fig. 3a). However, one pre-existing road could be identified in the photograph.

1937 to 1940. Since the 1937 photographs were not interpreted, the land use/cover was not available. However, two anomalies were identified in the land cover analysis for 1940 (see Table 1 and Fig. 3b). One anomaly was the result of a pre-existing road. The remaining anomaly is of potential concern and was the result of a new trail (1 anomaly).

1940 to 1944. Fifteen anomalies were identified during the land cover change analysis for the years 1940 and 1944 (see Table 1 and Fig. 3c). Three anomalies were the result of pre-existing roads and former trails. The remaining twelve anomalies are of potential concern and were the result of the clearing of trees (7 anomalies) and other cleared areas (5 anomalies).

1944 to 1954. Fourteen anomalies were identified during the land cover change analysis for the years 1944 and 1954 (see Table 1 and Fig. 3d). One anomaly was the result of a pre-existing road. The remaining thirteen anomalies are of potential concern and were the result of new trails (8 anomalies) and the clearing of trees (5 anomalies).

1954 to 1961. Eight anomalies were identified during the land cover change analysis for the years 1954 and 1961 (see Table 1 and Fig. 3e). Four anomalies were the result of pre-existing roads and former trails. The remaining four anomalies are of potential concern and were the result of the clearing of trees (3 anomalies) and a new trail (1 anomaly).

1961 to 1969. Fourteen anomalies were identified during the land cover change analysis for the years 1961 and 1969 (see Table 1 and Fig. 3f). Eleven anomalies were the result of pre-existing roads and former trails. The remaining three anomalies are of potential concern and were the result of the clearing of trees (3 anomalies).

1969 to 1982. Eight anomalies were identified during the land cover change analysis for the years 1969 and 1982 (see Table 1 and Fig. 3g). Two anomalies were the result of pre-existing roads and former trails. The remaining six anomalies are of potential concern and were the result of the clearing of trees (5 anomalies) and another cleared area (1 anomaly).

1982 to 1994. Six anomalies were identified during the land cover change analysis for the years 1982 and 1994 (see Table 1 and Fig. 3h). One of the anomalies was the result of a pre-existing road. The remaining five anomalies are of potential concern and were the result of the clearing of trees (5 anomalies).

Figure 1

Figure 2

Table 1. Cane Creek Training Area - Anomaly Resolution

Of Potential Concern ?	Anomaly #	Year of Change	Discussion	Related Anomalies¹
	1	1940	Pre-existing road (first visible 1937)	3, 18, 32, 40, 54, 55, 62
Yes	2	1940	New trail	4, 5, 6, 19, 20, 33
	3	1944	Pre-existing road (first visible 1937)	1, 18, 32, 40, 54, 55, 62
	4	1944	Former trail; overgrown (first visible 1940)	2, 5, 19, 33
Yes	5	1944	Former trail; area now cleared (trail first visible 1940)	2, 20, 33
	6	1944	Former trail; overgrown (first visible 1940)	2
Yes	7	1944	Cleared area	None
Yes	8	1944	Cleared area	None
Yes	9	1944	Cleared area	None
Yes	10	1944	Trees cleared	None
Yes	11	1944	Cleared area	None
Yes	12	1944	Trees cleared	None
Yes	13	1944	Trees cleared	None
Yes	14	1944	Trees cleared	None
Yes	15	1944	Trees cleared	None
Yes	16	1944	Trees cleared	None
Yes	17	1944	Trees cleared	None
	18	1954	Pre-existing road (first visible 1937)	1, 3, 32, 40, 54, 55, 62
Yes	19	1954	Trail	2, 4
Yes	20	1954	Trail	2, 5
Yes	21	1954	Trail	2, 22
Yes	22	1954	Trail	21, 23, 35, 42
Yes	23	1954	Trail	22, 24, 35, 42, 43
Yes	24	1954	Trail	23, 35, 43
Yes	25	1954	Trees cleared (associated with new trail)	26

Of Potential Concern ?	Anomaly #	Year of Change	Discussion	Related Anomalies¹
Yes	26	1954	Trees cleared	25
Yes	27	1954	Trees cleared	None
Yes	28	1954	Trees cleared	None
Yes	29	1954	Trees cleared	None
Yes	30	1954	Trail	31, 39, 47-50
Yes	31	1954	Trail	30, 39, 51-53
	32	1961	Pre-existing road (first visible 1937)	1, 3, 18, 40, 54, 55, 62
	33	1961	Former trail; overgrown (first visible 1954)	2, 4, 5, 19, 20
Yes	34	1961	Trail	35, 41
	35	1961	Pre-existing trail (first visible 1954)	34, 42, 43
Yes	36	1961	Trees cleared	None
Yes	37	1961	Trees cleared	None
Yes	38	1961	Trees cleared	None
	39	1961	Pre-existing trail (first visible 1954)	30, 31, 39, 47, 48, 49, 50, 51, 52, 53
	40	1969	Pre-existing road (first visible 1937)	1, 3, 18, 32, 54, 55, 62
	41	1969	Former trail; overgrown (first visible 1961)	34, 42
	42	1969	Former trail; overgrown (first visible 1954)	35, 41, 43,
	43	1969	Former trail; overgrown (first visible 1954)	35, 42
Yes	44	1969	Trees cleared	None
Yes	45	1969	Trees cleared	None
Yes	46	1969	Trees cleared	None
	47	1969	Former trail; overgrown (first visible 1954)	30, 31, 39, 48-50
	48	1969	Former trail; overgrown (first visible 1954)	30, 31, 39, 47, 49, 50
	49	1969	Former trail; overgrown (first visible 1954)	30, 31, 39, 47, 48, 50
	50	1969	Former trail; overgrown (first visible 1954)	30, 31, 39, 47-49
	51	1969	Former trail; overgrown (first visible 1954)	30, 31, 39, 52, 53

Of Potential Concern ?	Anomaly #	Year of Change	Discussion	Related Anomalies ¹
	52	1969	Former trail; overgrown (first visible 1954)	30, 31, 39, 51, 53
	53	1969	Former trail; overgrown (first visible 1954)	30, 31, 39, 51, 52
	54	1982	Pre-existing road (first visible 1937)	1, 3, 18, 32, 40, 55, 62
	55	1982	Former road; overgrown (first visible 1937)	1, 3, 18, 32, 40, 54, 62
Yes	56	1982	Trees cleared	None
Yes	57	1982	Trees cleared	None
Yes	58	1982	Cleared area	None
Yes	59	1982	Trees cleared	None
Yes	60	1982	Trees cleared	None
Yes	61	1982	Trees cleared	None
	62	1994	Pre-existing road (first visible 1937)	1, 3, 18, 32, 40, 54, 55
Yes	63	1994	Trees cleared	None
Yes	64	1994	Trees cleared	None
Yes	65	1994	Trees cleared	None
Yes	66	1994	Trees cleared	None
Yes	67	1994	Trees cleared	None

¹ Related anomalies refer to anomalies which are carried forward from year to year (e.g., a trail) or anomalies which change (e.g., the extension or widening of a trail or cleared area).

6.4 ANOMALIES OF POTENTIAL CONCERN

Sixty-seven anomalies were identified during the photographic interpretation of Crane Creek Training Area. All anomalies have been resolved; forty-four anomalies are considered to be of potential concern. To facilitate anomaly tracking, the anomalies of potential concern were mapped using the anomaly tracking number assigned in the year-by-year analysis (see Table 2 and Fig. 4). Table 2 provides information for each anomaly of potential concern, including the anomaly tracking number, coordinates for the approximate center of the anomaly (coordinates provided in Alabama State Plane East, North American Datum [NAD] 83), the year the change occurred, and the reason for the anomaly.

THIS PAGE INTENTIONALLY LEFT BLANK

Fig. 3a

Fig. 3b

Fig. 3c

Fig. 3d

Fig. 3e

Fig. 3f

Fig. 3g

Fig. 3h

Table 2. Cane Creek Training Area - Anomalies of Concern

Anomaly #	Alabama State Plane Coordinates (approximate anomaly center)		Year of Change	Discussion
	X-Coordinate	Y-Coordinate		
2	670402.19539	1166970.41346	1940	The 1940 photographs show a new trail in this area. The entire trail is evident in the 1944 photographs. By 1954, the southern portion of the trail was not evident, but the northern portion was in use as a new trail which extended eastward through the site. By 1961, the northern portion of the trail was overgrown.
5	670394.90877	1166991.23237	1944	This area was part of the northern portion of the trail discussed in anomaly of potential concern 2. The 1944 photographs show this area as cleared and the 1954 photographs show the area in use as a trail. By 1961, revegetation was underway.
7	670382.41743	1166981.86386	1944	The 1944 photographs show this area as cleared. By 1954, revegetation was underway.
8	670418.85052	1167015.17412	1944	The 1944 photographs show this area as cleared. By 1954, revegetation was underway.
9	670445.91510	1167037.03397	1944	The 1944 photographs show this area as cleared. By 1954, revegetation was underway.
10	670441.75132	1167069.30329	1944	Trees were cleared from this area prior to the acquisition of the 1944 photographs. Revegetation was underway by 1954.
11	670533.35453	1167001.64183	1944	The 1944 photographs show this large area as cleared. Vegetation regrowth is apparent in the 1954 photographs.
12	670576.03329	1166921.48902	1944	Trees were cleared from this area between 1940 and 1944. Revegetation was underway by 1961.
13	670663.47272	1166868.40080	1944	Trees were cleared from this area between 1940 and 1944. Reforestation was underway by 1954.
14	670512.53562	1166735.15978	1944	Trees were cleared from this area between 1940 and 1944. The area was maintained through 1982. By 1994, the area had become reforested.
15	670508.37183	1166823.64014	1944	Trees were cleared from this area between 1940 and 1944. The area was maintained through 1954. By 1961, reforestation was underway.
16	670485.47103	1166812.18974	1944	Trees were cleared from this area between 1940 and 1944. The area was maintained through 1961. By 1969, the area had become reforested.
17	670481.30725	1166884.01498	1944	Trees were cleared from this area between 1940 and 1944. By 1954, revegetation was underway
19	670374.08986	1167035.99303	1954	The 1954 photographs show a new trail in use in this area. The 1961 photographs show remnants of the trail. By 1969, the trail was no longer in use. By 1982, the area had revegetated.

Anomaly #	Alabama State Plane Coordinates (approximate anomaly center)		Year of Change	Discussion
	X-Coordinate	Y-Coordinate		
20	670395.94972	1166990.19143	1954	The 1954 photographs show a new trail in use in this area. The 1961 photographs show remnants of the trail. By 1969, the trail was no longer in use. By 1982, the area had revegetated.
21	670412.60485	1166958.96306	1954	The 1954 photographs show a new trail in use in this area. The 1961 photographs show remnants of the trail. By 1969, the trail was no longer in use. By 1982, the area had revegetated.
22	670479.22536	1166947.51266	1954	The 1954 photographs show a new trail was in use in this portion of the study area. The 1961 photographs show remnants of the trail and the 1969 photographs show revegetation underway.
23	670539.60020	1166965.20873	1954	The 1954 photographs show a new trail was in use in this portion of the study area. The 1961 photographs show remnants of the trail and the 1969 photographs show revegetation underway.
24	670583.31991	1166981.86386	1954	The 1954 photographs show a new trail was in use in this area. The 1961 photographs show remnants of the trail and the 1969 photographs show that this portion of the area was maintained. By 1982, revegetation was underway.
25	670434.46470	1166957.92212	1954	Trees were cleared in this area in the 1954 photographs; the clearing of trees was likely associated with the new trail (as discussed for anomalies of potential concern 19 through 24). Vegetation regrowth is evident in the 1969 photographs with reforestation evident in the 1982 photographs.
26	670440.71038	1166896.50633	1954	Trees were cleared in this area prior to the acquisition of the 1954 photographs. The area remained cleared in the 1961 photographs and by 1969, revegetation was underway. Reforestation is evident in the 1982 photographs.
27	670587.48369	1166849.66378	1954	Trees were cleared throughout this large area prior to the acquisition of the 1954 photographs. Photographs acquired in 1961, 1969, and 1982 show a mixture of vegetated and cleared areas.
28	670475.06158	1166780.96138	1954	Trees were cleared throughout this area prior to the acquisition of the 1954 photographs. Photographs acquired in 1961 show that a portion of the site was used for vehicle access. By 1969, revegetation was beginning and by 1994, the area had become reforested.
29	670528.14980	1166722.66843	1954	Trees were cleared throughout this area prior to the acquisition of the 1954 photographs. The area remained clear in photographs acquired in 1961. By 1969, revegetation was underway and by 1982, the area had become reforested.
30	670701.98770	1166752.85585	1954	The 1954 photographs show a new trail in use in this area. In 1961, remnants of the trail were evident. By 1969, revegetation underway.

Anomaly #	Alabama State Plane Coordinates (approximate anomaly center)		Year of Change	Discussion
	X-Coordinate	Y-Coordinate		
31	670681.16879	1166658.12981	1954	The 1954 photographs show a new trail in use in this area. By 1961, revegetation was underway.
34	670390.74499	1166943.34888	1961	The 1961 photographs show a new trail in this area. By 1969, revegetation was underway and by 1982, most of the area had become reforested.
36	670505.24900	1166975.61819	1961	Trees were cleared throughout this area between 1954 and 1961. By 1982, most of the area had become reforested.
37	670482.34820	1166724.75032	1961	Trees were cleared throughout this area between 1954 and 1961. By 1969, most of the area had become reforested and by 1982, reforestation was evident throughout the area.
38	670590.60653	1166710.17708	1961	Trees were cleared throughout this area between 1954 and 1961. By 1982, the area had become reforested.
44	670509.41278	1167045.36154	1969	A few trees were cleared in this area between 1961 and 1969. By 1982, revegetation was underway.
45	670589.56558	1166789.28894	1969	Trees were cleared in this area between 1961 and 1969. By 1982, revegetation was underway.
46	670671.80028	1166765.34720	1969	A few trees were cleared in this area between 1961 and 1969. By 1982, revegetation was underway.
56	670471.93874	1166780.96138	1982	A few trees were cleared in this area between 1969 and 1982. By 1994, revegetation was underway.
57	670506.28994	1167101.57260	1982	A few trees were cleared along the road between 1969 and 1982. By 1994, revegetation was underway.
58	670567.70573	1167025.58357	1982	All vegetation was cleared from this small area prior to the acquisition of the 1982 photographs. The area remained clear in the 1994 photographs.
59	670617.67111	1166939.18510	1982	A few trees were cleared in this area between 1969 and 1982. By 1994, vegetation growth was underway.
60	670684.29163	1166796.57556	1982	A few trees were cleared in this area between 1969 and 1982. The 1994 photographs show that vegetation growth was underway.
61	670680.12784	1166672.70304	1982	Trees were cleared in this area between 1969 and 1982. The 1994 photographs show that revegetation was underway.
63	670628.08057	1166899.62917	1994	Trees were cleared in this area between 1982 and 1994.
64	670680.12784	1166853.82756	1994	Trees were cleared in this area between 1982 and 1994.

Anomaly #	Alabama State Plane Coordinates (approximate anomaly center)		Year of Change	Discussion
	X-Coordinate	Y-Coordinate		
65	670672.84123	1166772.63381	1994	Trees were cleared in this area between 1982 and 1994.
66	670746.74836	1166696.64479	1994	Trees were cleared in this area between 1982 and 1994.
67	670682.20974	1166641.47468	1994	Trees were cleared in this area between 1982 and 1994.

Figure 4